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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/680,858	10/06/2000	Peter Beetham	PM49317/272063	9880

7590 08/06/2004

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[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

1638

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/680,858	BEETHAM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	David H Kruse	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 19 May 2004.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 24 and 28-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 24 and 28-38 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

### **STATUS OF THE APPLICATION**

1. This Office action is in response to the Remarks filed on 19 May 2004.
2. Those rejections not specifically addressed in this Office action are withdrawn in view of Applicant's arguments.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 112***

4. Claim 36 remains rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is repeated for the reason of record as set forth in the last Office action mailed 19 November 2003. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive.

Applicant argues that the claim covers a regenerated plant. This argument is not found to be persuasive because the claim appears to be directed to an isolated plant microspore, and not to a regenerated plant. The body of the claim appears to be directed to an intended use of the claimed plant microspore. Hence, the metes and bounds of the claim remain unclear.

5. Claims 28 and 29 are indefinite under 35 U.S.C. § 112, second paragraph, as being indefinite because they recite the limitation "composition" in line 1. There is insufficient antecedent basis for this limitation in claim 24 upon which said claims depend.

6. Claims 24 and 28-38 remain rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is repeated for the reason of record as set forth in the last Office action mailed 19 November 2003. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive.

Applicants argue that the invention contributes to the state of art that mixed duplex oligonucleotides (MDON) can be used to form a mutation in the genome of a microspore and that a written description of that broad invention cannot be disputed (page 2, last paragraph of the Remarks). It is clear from Applicant's arguments that the Examiner's opinion has not been stated in a clear manner, an attempt to clarify the rejection is made herein. The claimed plant microspore comprising a mixed duplex oligonucleotide is not adequately described because the mixed duplex oligonucleotide is only described by a function, wherein said function does not adequately describe the structure. Mixed duplex oligonucleotides are only described as to their most basic structure (pages 1-2 of the specification). The instant claims are directed to a composition comprising any mixed duplex oligonucleotide that could introduce any genomic mutation in any gene of any plant microspore. Hence, it remains unclear that Applicant was in possession of the invention as broadly claimed. See MPEP § 2163 which states that the claimed invention as a whole may not be adequately described

where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

7. Claims 24 and 28-38 remain rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection is repeated for the reason of record as set forth in the last Office action mailed 19 November 2003. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive.

Applicants argue that Kochevenko and his colleagues were successful in making the desired mutations by *in vivo* targeting of endogenous tobacco ALS genes using chimeric RNA/DNA and all-DNA oligonucleotides at two different locations. Applicants argue that gene repair technology in general always results in a desired mutation (phenotype) but as the art recognizes that there are also other mutations that may occur, and that sometimes the other non-desirable mutations don't occur as seen in the target gene ALS-1719 in Table 1 of Kochevenko *et al* where only the desired change was observed (page 3, 4<sup>th</sup> paragraph of the Remarks). These arguments are not found

to be persuasive for the reasons of record. Kochevenko *et al* teach that targeted mutations in plants are unpredictable, and that predictability appears to be dependent upon that targeted site, in addition depending upon the target site, one of skill in the art may or may not be able to identify a mutation (see paragraph spanning pages 180-181). The art also teaches that optimizing the length and structure of the RDO (RNA-DNA oligonucleotides, syn. mixed duplex oligonucleotide), such as lengthening and homologous region or changing the place of the mismatch on the chimeric double-stranded region (Liang *et al* 2002, Eur. J. Biochem. 269: 5753-5758, see page 5754, left column, 2<sup>nd</sup> paragraph). Applicant provides no guidance on how to optimize the length and structure of a mixed duplex oligonucleotide by which one of skill in the art could use the claimed invention without undue trial and error experimentation.

Applicants argues that in the biotechnology arts involving gene manipulations the skilled artisan always will conduct routine experiments to check that the gene manipulation is the desired one and that this art is sophisticated and [that] routine experimentation is always done to verify results (page 3, 4<sup>th</sup> paragraph of the Remarks). This argument is not found to be persuasive because the issue is how to make and use the mixed duplex oligonucleotides as broadly claimed to make and use the plant microspore comprising a mixed duplex oligonucleotide, the mutated plant microspore and the regenerated plant as broadly claimed. See *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970) which teaches “That paragraph (35 USC 112, first) requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art. In cases involving

predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.”

***Claim Rejections - 35 USC § 102***

8. Claims 30-32 and 26-38 remain rejected under 35 U.S.C. § 102(a) as being anticipated by Hawkes *et al* (WO 98/54330, published 3 December 1998, priority date 28 May 1997). This rejection is repeated for the reason of record as set forth in the last Office action mailed 19 November 2003. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive.

Applicants argue that Hawkes *et al* discloses gene repair in pollen versus the gene repair of microspores in the present claims. Applicants further argue that the current claim limitations require that the genomic mutation be made by gene repair of the microspore and that these claims do not cover mutations made in pollen (page 4, 3<sup>rd</sup> paragraph of the Remarks). The issue of indefiniteness of claim 36 had been addressed in the previous Office action. Applicants' response states that Applicants intend claim 36 to be directed to a regenerated plant (page 2, 3<sup>rd</sup> paragraph of the Remarks). Applicants' arguments are not found to be persuasive because the *Brassica napus* plant disclosed by Hawkes *et al* would inherently comprise a mutated microspore comprising a genomic mutation introduced by a mixed duplex oligonucleotide. The

method of making of the instant inventions does not adequately distinguish the product made from that previously disclosed by Hawkes *et al*, hence the instant claims are anticipated. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

***Claim Rejections - 35 USC § 103***

9. Claims 24, 28, 29 and 33-36 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Kmiec (US Patent 5,731,181, filed 17 June 1996) in view of Fennell *et al* (1992, Plant Cell Reports 11:567-570). This rejection is repeated for the reason of record as set forth in the last Office action mailed 19 November 2003, and has been modified from that of the previous Office action. Applicant's arguments filed 19 May 2004 have been fully considered but they are not persuasive.

Applicants argue that the gene repair reference (Kmiec '181) cannot be properly combined with the microspore transformation reference (Fennell et al) because of the various differences not only in the physical and chemical properties between large polynucleotides used in transformation and the small fragile oligonucleotides used in gene repair but also the differences between gene repair and transformation themselves (page 4, 5<sup>th</sup> paragraph of the Remarks). Applicants further argues that it would only be "obvious to try" to use the methodologies taught by Fennell *et al* with the gene repair taught by Kmiec '181, and that one of ordinary skill in the art would not have had a reasonable expectation of success (page 4, 5<sup>th</sup> paragraph of the Remarks).

These arguments are not found to be persuasive because as previously stated by the Examiner, Kmiec teaches that the mixed duplex oligonucleotide can be introduced into a cell using a wide variety of techniques known in the art at the time of Applicant's invention including electroporation and liposome mediated fusion (see column 1, lines 29-33). The method of introducing polynucleotides as taught by Fennell *et al* would have been considered a reasonable method as suggested by Kmiec, and that one of ordinary skill in the art would have been motivated to use the method of Fennell *et al* because they teach that using microspores has the advantage as useful for producing haploid plants that can be used to produce homozygous diploids (see page 567, right column, end of Introduction). There is nothing in either reference that teaches away from the instant invention as claimed, in fact Kmiec motivates one of ordinary skill in the art to use a method of introducing the mixed duplex oligonucleotide that is appropriate for the organism for which it's use is directed. Finally, one of ordinary skill in the art would have had a reasonable expectation of success given the teachings of Fennell *et al* in introducing a mixed duplex oligonucleotide into any plant microspore and producing a genetic mutation as suggested by the teachings of Kmiec.

#### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 30-38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 14 of U.S. Patent Application 09/685,403. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of producing a non-transgenic herbicide resistant or tolerant plant of the copending application renders obvious the claimed regenerated plant or seed produced there from. The differences in the methods of making do not adequately distinguish the claimed produces. This rejection is provisional because the claims of the copending application have not yet been patented, although the Examiner notes that the claims of the copending application have been allowed.

***Conclusion***

12. This Office action is non-final in view of the new grounds of rejection.
13. No claims are allowed.
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Kruse, Ph.D. whose telephone number is (571) 272-0799. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Amy Nelson can be reached at (571) 272-0804. The fax telephone number for this Group is (703) 872-9306 Before Final or (703) 872-9307 After Final.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is

(571) 272-0547.

*David Kruse*  
DAVID H. KRUSE, PH.D.  
PATENT EXAMINER  
*AU 1638*

David H. Kruse, Ph.D.

4 August 2004

15. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

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